WHY INSULATE?
WHY RENOVATE?
WITH MINERAL WOOL INSULATION

QUALITY OF LIFE STARTS IN BUILDINGS
Insulation is a ‘win-win’ for people, business, government and the planet alike!

We spend nearly 90% of our lives indoors, so it’s essential that our buildings and homes are comfortable, safe, healthy, stress-free, and affordable to maintain.

An insulated building is a better-quality building in every respect.

Insulation provides thermal comfort, saves money by cutting energy costs and creates healthier environments. The benefits of insulation can be enjoyed for generations to come.

When the energy renovation of buildings is scaled up — from individual buildings to millions of buildings — the whole of society wins, through the many ancillary benefits like CO₂ emissions reduction, job creation and better overall living conditions.

The size¹ of the current EU energy renovation market could increase by almost half, if a 40% energy savings target would be set for 2030. This would lead to more than a million jobs.
1% of EU buildings were built with minimal or no energy-related requirements, offering massive potential to make a difference with insulation and renovation.

40% buildings are responsible for 40% of energy consumption and 38% of total CO₂ emissions in the EU. Renovate them to be more energy efficient and the gains will be enormous.

- 50% a 50% reduction in energy use in the European building stock would reduce CO₂ emissions by 18% by 2030.

89-153€ billion highly efficient buildings can reduce energy demand and peak loads by 57 GW and cut capital cost requirements in power sector between 89-153€ billion all by 2050.

75% of EU buildings were built with minimal or no energy-related requirements, offering massive potential to make a difference with insulation and renovation.

1.2% is the existing renovation rate per year in the EU.

2.5% should be the minimum renovation rate per year in the EU.

New builds are more energy efficient than old, but they will not change the energy efficient landscape as quickly as renovation.
WHY SHOULD WE INSULATE OUR HOMES?

Insulation is an essential part of the Building Envelope, securely separating the interior of dwellings from the outdoor environment constraining the movement of heat, moisture, air and noise.

Insulation stabilizes indoor temperatures and helps to better preserve buildings for longer periods of time.

Proper insulation can reduce household energy needs by 70\% \(^9\).

Insulation works as a barrier to heat and cold keeping out unwanted heat in the summer while retaining precious warmth in the winter.

One letter improvement in the energy class of a building through insulation, leads to an increase in property value of between 0,5\% – 10,5\% \(^10\).

A well-insulated home provides a healthy indoor environment without cold surfaces and risk of mould.

Insulated homes are critical to the living conditions of Europe’s population especially for the vulnerable and elderly.

Insulation reduces the amount of external noise, allowing for a quiet, peaceful living environment, in particular this is the case of Mineral Wool.

Insulation has a “fit-and-forget” benefit as it requires little to no maintenance and/or replacement once well-installed.
DID U KNOW?

- Increased comfort
- Improved health
- Stabilised temperature
- Return on investment
- Direct savings
- Enhanced well-being
A direct positive effect on health and wellbeing results from insulation. Improving indoor and outdoor air quality with insulation provides enormous savings to society; both in terms of health and life expectancy, an annual EU gain of 70,000 life years can be achieved by reducing emissions. In addition, related economic savings amount to at least 6.64 billion/year across the EU.

Mineral wool insulation in particular, transforms people’s lives by making buildings better places in which to live — whatever the climate — by making it easier to keep a home warmer or cooler for longer. Building quality is built on comfort. Insulation creates comfort zones that allow everyone — particularly the young, old and vulnerable — to flourish in healthier environments.

Mineral wool insulation provides warmth by preventing heat loss, providing comfortable indoor temperatures and reducing stress-inducing noise pollution.
70.000 ANNUAL GAIN OF LIFE YEARS THROUGH REDUCED EMISSIONS

6.64€ BILLION YEAR RELATED ECONOMIC SAVINGS
Noise pollution is a major environmental health problem in Europe. The EEA estimates that traffic noise directly affects the lives of 125 million Europeans, and probably yourself!

The sleep of 8 million Europeans is of lesser quality because of exposure to too high noise levels. Environmental noise is linked to approximately 43,000 hospital admissions, 900,000 cases of hypertension and up to 10,000 premature deaths per year. The European Commission estimates the social cost of rail and road traffic noise in the EU as being 40 billion per year.

Mineral wool insulation provides a highly effective barrier to noise. That is because the structure of the fibres in glass and stone wool significantly dampens sound. There is a range of mineral wool products which help to better manage sound, these products are used in all kinds of settings – from offices, public buildings and homes through to hospitals, laboratories and industrial facilities.
125 MILLION
Europeans affected by noise

40€ BILLION
Social cost of noise per year

10,000
Premature deaths per year
Insulation unlocks massive long-term financial benefits and is cost effective by cutting energy bills.

Heating a home is now one of the largest household costs and the best way to reduce bills is with a more efficient, better insulated home.

How much you can save depends on e.g. the size of your home and the type of insulation you install.
INSULATION SAVES UP TO 15

1,350€
A YEAR FOR AN INEFFICIENT HOUSE (300KWH/M²/YEAR)

670€
A YEAR FOR AN AVERAGE HOUSE (150KWH/M²/YEAR)

90€
A YEAR FOR A PASSIVE HOUSE (15KWH/M²/YEAR)
By building sensibly using adequate fire protection materials, the risk of fire can be significantly reduced.

Taking one single year in Germany as example, fire damage costs to the insurance industry was estimated at around 6€ billion. Buildings as well as their contents contribute to the spread of fire.

Mineral Wool insulation contributes to safer buildings. In fact, mineral wool insulation acts as a fire barrier, slowing down house fires and giving the emergency services extra time due to its qualities which delay fire spread; this helps save lives, money and property and keep pollution to a minimum.
6€ BILLION

INSURANCE FIRE DAMAGE COSTS PER YEAR
FOR GERMANY ALONE
MINERAL WOOL INSULATION MATTERS TO SOCIETY

THE COMMITMENT TO LIFE CYCLE ASSESSMENT

In order to assess the environmental impact of a product, each of its positive and negative contributions on the environment from “cradle-to-grave” must be carefully valued. Mineral wool producers are committed to LCAs and the use of related Environmental Product Declarations (EPDs).

Over the 50-year lifetime of a home, mineral wool insulation can save more than 200 times the CO₂ emissions that are generated during its manufacture, transportation, installation and disposal.

This is based on the Eurima mineral wool LCA calculations, which compares the environmental impacts and savings during the life-cycle of mineral wool products in a standard building (located in Strasbourg, France).

As it can be clearly seen, the negative impact during production and construction stages is overwhelmingly compensated by the positive impact of the energy savings during the use phase. This is calculated for all LCA indicators and especially striking for Global Warming Potential, Primary Energy Use, and Ozone Depletion Potential.
Ratios for energy related environmental impact indicators

- Ozone Depletion Potential: 597
- Primary Energy non-renewable: 580
- Global Warming Potential: 241
- Acidification Potential: 223
- Photochemical Ozone Creation Potential: 179
- Eutrophication Potential: 78

Environmental benefit through energy savings during 50 years use
Environmental impact
WHY SHOULD WE RENOVATE OUR HOMES?

New buildings only account for 1% of the entire building stock in Europe every year! This means that Europe’s largest untapped energy source are existing buildings!

75% of EU buildings were built with minimal or no energy related requirements offering massive potential to make a difference.

The energy renovation of our EU buildings has the potential to create up to 2 million jobs by 2020.

Energy Efficiency improvements by 2020 can bring health benefits of 5-8€ billion by reducing outdoor air pollution and 33-73€ billion by improving indoor air quality.

Global CO₂ emissions from energy use in buildings can be reduced by 29% by 2020, through renovation and insulation. Insulating EU buildings can reduce CO₂ emissions by 204 million tonnes per year, equivalent to 43 million cars being taken off the road!

The most effective way to tackle energy poverty is through renovation and insulation!

For every 1% improvement in energy efficiency in Europe, EU gas imports drop by 2.6% with the existing building stock as main contributor.
REDUCING ENERGY POVERTY
CREATING LOCAL JOBS
IMPROVING PUBLIC HEALTH
A CATALYST FOR CLEAN AND FLEXIBLE ENERGY SUPPLY
TACKLING CLIMATE CHANGE

In 2015 the EU renovation market was estimated at 109€ billion.
When energy renovation and insulation are scaled up they drive economic growth and job creation.

The 2015 Energy Productivity and Economic Prosperity Index estimates that up to 1.8 million new jobs could be created if Europe’s energy bill was cut by 200€ billion.

At least 50% of the value-added of the building sector is generated by work on the building envelope.

This economic boost would translate into 40€ billion in extra net income to public finances and would be in the form of direct jobs, which cannot be delocalised.
1.8 MILLION NEW JOBS COULD BE CREATED IF

200€ BILLION CUT IN EUROPE’S ENERGY BILL

50% VALUE-ADDED BY WORK ON BUILDING ENVELOPE

40€ BILLION EXTRA INCOME TO PUBLIC FINANCES
A total of 197 countries agreed to deliver a below 2°C in order to tackle climate change at the Conference of Parties in Paris (COP) in 2015.

How can they boost that? Energy efficient renovation involving the insulation of existing buildings is the key to success. In the EU, buildings consume 40% of final energy and are responsible for 36% of our greenhouse gases.

Insulating the 75% of EU buildings which are still inefficient, could reduce CO₂ emissions by 204 million tonnes per year; the equivalent of 43 million cars being taken off the road for one year.
Buildings have the biggest potential in emissions reduction.
RENovation Matters to Society

A Catalyst for Clean and Flexible Energy Supply

Highly efficient buildings would transform our energy landscape by reducing peak demand and improving the integration of renewable energy and smart technologies.

By renovating and insulating the 75% of our buildings which are inefficient, peak demand for electricity could be cut by 57GW by 2050 — equal to the current total electricity production capacity of the Netherlands and Austria.
Figure 2.4  |  Two Investment Paths to Sustainable Energy in High-Performance Buildings

Note: Size of circles represents relative investment cost.

Source: Authors.

WITH HIGH ENERGY, ADVANCED TECH = HIGH ADDITIONAL COST

- On-Site Generation
- Renewable Energy
- Smart Grid, Microgrid
- Energy Storage

WITH HIGH EFFICIENCY, ESTABLISHED TECH = LOW OR NO ADDITIONAL COST

- On-Site Generation
- Renewable Energy
- Smart Grid, Microgrid
- Energy Storage

Note: Size of circles represents relative investment cost.
About 55 million Europeans or 11% of the EU population suffer from fuel poverty. The three top reasons for this are a poor building envelope with little insulation, high energy prices and low income.

The result of fuel poverty is that in 2012 there were 19% of the EU population living in homes not comfortably cool in summer and 11% living in homes not comfortable in winter.

Heating and cooling can amount to 16% of EU consumers' bills, renovation and insulating properly can save up to 70% of heating needs.
55 million Europeans suffer from fuel poverty

16% of EU consumers’ bill is for heating & cooling

70% of heating needs saved, if insulating properly
For every 1% improvement in energy efficiency across Europe, EU gas imports drop by 2.6%.  

We import 53% of our energy, costing us 1 billion/day.

Buildings use 61% of all imported gas and an energy renovation programme across Europe could reduce the sector’s energy imports by over 60% by 2030 and 100% by 2050.
61% of all imported gas is used in buildings

1€ billion/day is the cost of energy imports

100% reduction in gas imports by 2050
The human cost of living in inadequate buildings is staggering. For example, the total societal cost of having people live in existing ‘unimproved’ housing is estimated at 194€ billion.\textsuperscript{40}

Studies carried out in different countries show that for every 1€ invested in the thermal renovation of buildings, a saving of 42 cents is achieved on health costs.\textsuperscript{41}

Children in cold buildings are more likely to have respiratory problems. There are also clear links between cold housing and excess winter deaths among the elderly. Renovating with insulation contributes significantly to creating warmer buildings.

90% of our buildings will still be here in 2050.
194€ billion
Total cost of societal healthcare savings

Every 1€ invested saves 42 cents
Did you know that all new buildings have to be Nearly Zero-Energy Buildings (NZEBs) by the end of 2020? This is a requirement of the Energy Performance of Buildings Directive (EPBD). NZEBs have very high-energy performance.

However, there is no clear plan for dealing with the buildings and homes that we already have. What we need is a plan that is seen as doable by Member States, provide business and building owners with certainty and that brings confidence to the construction market.

A solution would be to extend the known NZEB principle to existing buildings, and setting a realistic timeframe to 2050. Insulating the building envelope is a prerequisite for the transition to NZEBs.

1.241€ billion the building sector turnover in the EU 28 in 2013, this is the equivalent to more than 9% of the EU’s GDP that year.
Once a building has been transformed by renovation it can be left alone to get on with its job of saving energy.

An energy efficient building envelope is easy to run for anyone — owner or tenant — there is no need to change their habits.

High levels of energy-saving performance can be achieved with energy renovation of buildings.

A resilient smart building begins with a high performing building envelope. Mineral wool insulation provides that start.

An energy efficient renovated building requires little to no ongoing maintenance. Even better, its trouble-free benefits are enjoyed for decades.
THE WAY FORWARD

EDUCATE
Too often people take insulation for granted, they only notice when it’s not there. People need to be informed, when buying or renovating a building, how insulation will improve their lives and how to proceed from the decision to renovate to enjoying a warmer and more cost-efficient building.

REGULATE
Renovation can only thrive with an ambitious long-term vision to make Europe’s building stock Nearly Zero Energy by 2050 helped by milestones along the way and robust regulatory drivers, such as minimum energy performance standards. Energy and climate policy must enshrine the principle of Trias Energetica, also known as the energy efficiency first principle.

FACILITATE
Public authorities need to facilitate renovation by incentivising improvements, providing assistance and information, enabling workforce training and securing a stable investment climate.
Renovating the existing building stock to NZEB level by 2050.

Setting a kWh/m²/y benchmark for Heating and Cooling (H&C) energy demand.

Unlocking financial bottlenecks for investment in building renovation.

Strengthening key enablers for building renovation such as Energy Performance Certificates (EPCs).

Improving implementation and enforcement of the EPBD and its measures within the existing legal framework.
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Purpose: The present information note was prepared by Eurima and is intended as a tool among others to help policy makers understand the benefits of insulation and renovation. It is for general information purposes only.

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